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ABSTRACT

Developed in accordance with "Rules, Regulations, and Minimum Standards" of the Tennessee State Board of Education, this publication serves as a basis for developing science curriculum guides for teachers of science in grades K-8. In this framework, science skills are listed by grade groups: K-2; 3-4; 5-6; and 7-8. These skills are categorized as process skills, reading/study skills, and interpersonal relations and attitudes. Goals, concepts, and terminal objectives are stated by grade level for each science area. Science areas include physical science; life science; earth and space sciences; and environmental sciences. A system which entails a call number is employed with each of the terminal objectives. (ML)

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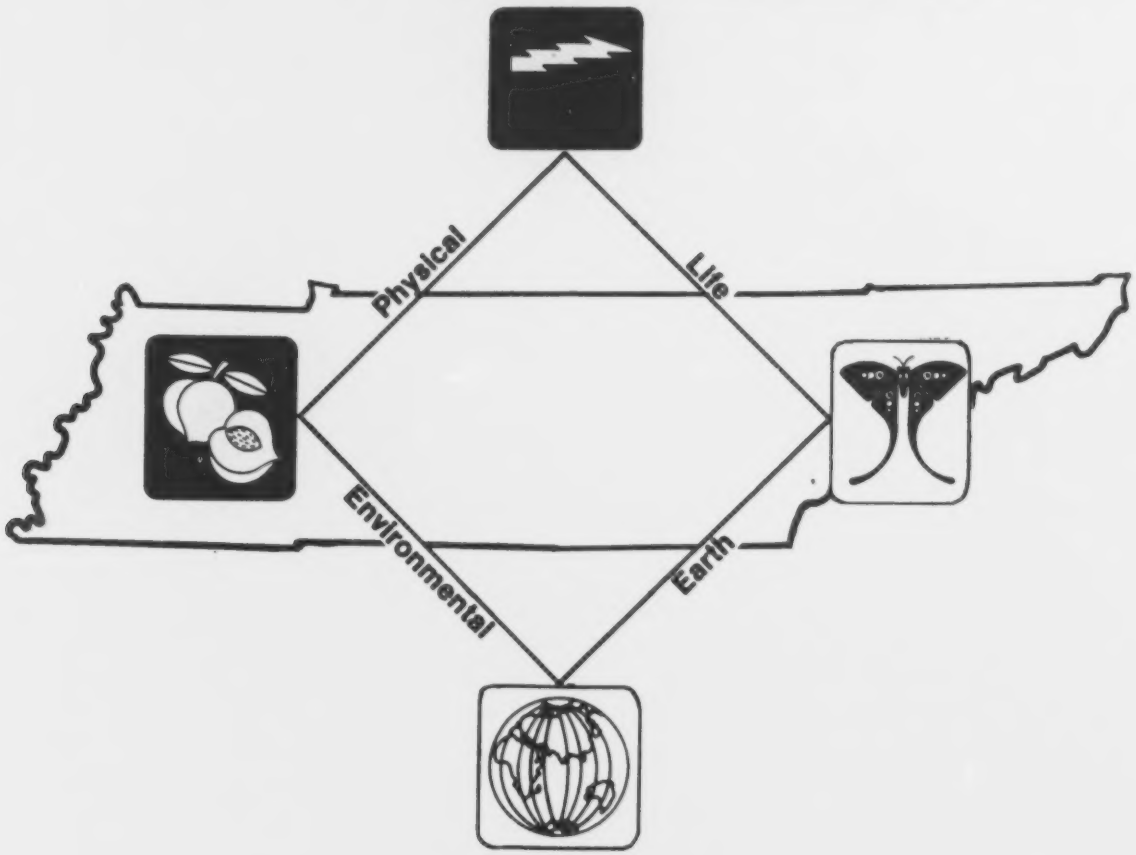
SCIENCE

CURRICULUM FRAMEWORK



STATE of TENNESSEE
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1984

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SCIENCE

CURRICULUM FRAMEWORK

STATE of TENNESSEE

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GOALS OF EDUCATION IN TENNESSEE

Science education is closely related to the goals of education set forth by the State Board of Education. The Rules, Regulations, and Minimum Standards require that a continuous program in science be provided for every child in kindergarten through grade eight. Therefore, this Science Framework is designed to assist in the accomplishment of these goals which are stated in the Rules, Regulations, and Minimum Standards as follows:

Every Person Should:

(a) HAVE COMPETENCE IN THE FUNDAMENTALS OF LEARNING AND COMMUNICATION

(b) DEVELOP SKILLS AND ATTITUDES WHICH FACILITATE LEARNING

(c) HAVE SUFFICIENT INFORMATION TO REALIZE LIFE GOALS

(d) KNOW THE PRINCIPLES, HABITS, AND ATTITUDES CONDUCIVE TO GOOD PHYSICAL AND MENTAL HEALTH

(e) ESTABLISH AND MAINTAIN SATISFACTORY RELATIONSHIPS WITH OTHERS

(f) KNOW AND PRACTICE THE BASIC REQUIREMENTS OF RESPONSIBLE CITIZENSHIP

(g) HAVE COMPETENCE IN THE USE OF NATURAL RESOURCES AND IN MAINTENANCE OF ECOLOGICAL BALANCE

(h) ACQUIRE CAREER INFORMATION AND ECONOMIC COMPETENCE

(i) APPRECIATE CULTURAL AND AESTHETIC VALUES

(j) BE AWARE OF THE INCREASING INTERDEPENDENCE AMONG PEOPLE AND NATIONS

GOALS OF SCIENCE EDUCATION IN TENNESSEE

The primary aim of science education is to develop scientifically literate individuals who understand how science, technology, and society influence one another, and who are able to use this knowledge in their everyday decision-making. Science education should:

1. Allow students to pursue science academically as well as professionally and to acquire the knowledge appropriate to their needs.

2. Give all students an awareness of the nature and scope of a wide variety of science and technology-related careers open to students of varying aptitudes and interests.

3. Prepare individuals to utilize science concepts, process skills, and values in making responsible everyday decisions.

4. Produce informed citizens who recognize the limitations as well as the usefulness of science and technology in advancing human welfare.

5. Prepare students who understand the major concepts, hypotheses and theories of science and their applications.

6. Develop an appreciation of the history of science and an understanding that scientific knowledge is tentative and subject to change as evidence accumulates.

7. Enable the user to understand that society controls science and technology through the allocation of resources.

8. Promote a stimulus for further interests in science and technology.

9. Enable a person to have a richer and more exciting view of the world.

10. Enable students to distinguish between information which is scientifically sound and that which reflects value judgments.

11. Enable the student to find and use scientific and technological information for decision-making.

12. Develop within students skills which enable them to comprehend and to communicate scientific knowledge to others.

13. Promote mutual respect in interpersonal and group relationships through science-related experiences.

RATIONALE

THE GENERAL PURPOSE OF EDUCATION IS TO DEVELOP CITIZENS WHO CAN FUNCTION SUCCESSFULLY AND CONTRIBUTE POSITIVELY WITHIN AN INCREASINGLY COMPLEX SOCIETY. ADVANCES IN SCIENCE AND TECHNOLOGY HAVE CHANGED LIFE-STYLES, AND CONTINUE TO BE A MAJOR INFLUENCE ON CULTURAL DEVELOPMENTS. THEREFORE, A SOUND PROGRAM IN SCIENCE EDUCATION IS A SIGNIFICANT NEED FOR EVERY INDIVIDUAL. NO PERSON ESCAPES THE INFLUENCE OF SCIENCE. MODERN CONVENIENCES, AVAILABLE FOOD SUPPLIES, MAINTENANCE OF HEALTH, MINERAL AND ENERGY RESOURCES, AND A LIVEABLE ENVIRONMENT ARE AMONG THE IMPORTANT NEEDS THAT ARE DEPENDENT UPON SCIENCE. THUS, SCIENCE EDUCATION MUST BE CONSIDERED AN ESSENTIAL PART OF THE EDUCATIONAL PROGRAM FROM KINDERGARTEN THROUGH GRADE TWELVE.

CONTENT EMPHASIS

	PHYSICAL				LIFE					EARTH AND SPACE				ENVIRONMENTAL		
	MACHINES AND WORK	ELECTRICITY AND MAGNETISM	SOUND, HEAT AND LIGHT	MATTER AND ENERGY	ANIMALS	PLANTS	HUMAN BODY	GROWTH AND DEVELOPMENT	MICROSCOPIC LIFE	ASTRONOMY	METEOROLOGY	GEOLOGY	OCEANOGRAPHY	ENERGY AND THE ENVIRONMENT	MAN'S EFFECT ON THE EARTH	ECOSYSTEMS
Grade K	√	√	√		√	√	√	√		√	√			√	√	
Grade 1	√		√	√	√	√	√	√		√		√		√	√	√
Grade 2		√	√		√	√		√		√	√	√		√	√	√
Grade 3	√	√		√	√	√	√			√	√	√		√	√	√
Grade 4		√	√	√	√	√	√		√		√	√	√	√	√	√
Grade 5	√	√	√	√	√	√	√		√			√		√	√	√
Grade 6	√	√	√	√		√	√	√		√		√	√	√	√	√
Grade 7					√	√	√	√	√						√	√
Grade 8										√	√	√	√	√	√	

PREFACE

In accordance with Rules, Regulations, and Minimum Standards of the State Board of Education, this Science Curriculum Framework was developed by a statewide committee of science educators. It is designed to serve as a basis for developing science curriculum guides for teachers of science, grades K-8. Each local school system is required to implement the science curriculum framework beginning with the 1985-86 school year.

In this document science education skills are listed by grade groups, K-2, 3-4, 5-6, and 7-8. The skills are categorized as process skills, reading/study skills, and interpersonal relations and attitudes. Goals, concepts, and terminal objectives were developed by grade level for each science area. The concepts and terminal objectives are listed according to the various strands included within each area. Each terminal objective is preceded by a call number.

Example: 45182

First number	4 = grade (4)
Second number	5 = subject (science)
Third number	1 = area (physical science)
Letter	B = strand (electricity and magnetism)
Last number	2 = objective number

The State Department of Education expects to make available a sufficient number of copies of the framework to each school system to facilitate the correlation of instructional objectives with the stated concepts and terminal objectives. Although not comprehensive, the Science Curriculum Framework is intended to provide direction and add stability to the statewide program of science education.

SCIENCE

CURRICULUM FRAMEWORK

Skills and Content

K - 2

THE SCIENCE CURRICULUM IN KINDERGARTEN THROUGH GRADE 2 SHALL INCLUDE BUT NOT NECESSARILY BE LIMITED TO THE SKILLS AND CONTENT CONTAINED IN THIS SECTION.

THE SKILLS AND CONTENT LISTED SHALL BE INTRODUCED AND REINFORCED AS NECESSARY TO HELP STUDENTS ACHIEVE TO THEIR MAXIMUM POTENTIAL.

SCIENCE EDUCATION SKILLS

K - 2

PROCESS SKILLS	READING/STUDY SKILLS	INTERPERSONAL RELATIONS AND ATTITUDES
Observing Describing Sorting and grouping objects Predicting Measuring (length and mass) Questioning Sequencing Drawing conclusions Using space/time relations	Following directions Reading to find answers to questions Interpreting pictures	Listening Cooperating Communicating orally and in writing Appreciating science for enjoyment Appreciating the ideas of others Understanding how our activities affect the environment Appreciating the beauty of nature Developing a sense of responsibility Respecting rules and authority

PHYSICAL SCIENCE

GRADE: Kindergarten

GOAL: Ø51ØØ DEVELOPING AN AWARENESS OF THE PHYSICAL WORLD

A. MACHINES AND WORK

CONCEPT: Work involves movement of objects.

OBJECTIVES

Ø51A1 - To understand the use of simple machines in doing work.

Ø51A2 - To recognize such simple machines as the hammer, screwdriver, bottle opener, and scissors.

B. ELECTRICITY AND MAGNETISM

CONCEPT: Electricity is useful but dangerous.

OBJECTIVES

Ø51B1 - To understand the importance and uses of electricity.

Ø51B2 - To understand the importance of observing safety rules in using electrical appliances.

CONCEPT: Magnets can both attract and repel.

OBJECTIVES

Ø51B3 - To understand that magnets attract some objects and not others.

C. SOUND, HEAT AND LIGHT

CONCEPT: There are different kinds and sources of sound.

OBJECTIVES

Ø51C1 - To observe that sound is created by vibrating matter.

Ø51C2 - To recognize sounds as loud or soft, pleasant or unpleasant, and high or low pitched.

Ø51C3 - To understand how sounds are useful in determining location.

Ø51C4 - To identify harmful sounds and their sources.

D MATTER AND ENERGY

LIFE SCIENCE

GRADE: Kindergarten

GOAL: Ø52ØØ UNDERSTANDING CHARACTERISTICS OF LIVING THINGS

E. ANIMALS	F. PLANTS	G. HUMAN BODY	H. GROWTH AND DEVELOPMENT	I. MICROSCOPIC LIFE
CONCEPT: Animals reproduce by having young. OBJECTIVES Ø52E1 - To understand that animal young are like the adult. Ø52E2 - To understand how various animals reproduce and care for their young. **CONCEPT:** Animals live in a variety of habitats. OBJECTIVES Ø52E3 - To recognize some animal habitats.	**CONCEPT:** Plants are living things that grow and change. OBJECTIVES Ø52F1 - To observe how plants grow and change.	**CONCEPT:** There are similarities and differences among humans. OBJECTIVES Ø52G1 - To identify major parts of the human body. Ø52G2 - To observe how people are alike and different. **CONCEPT:** Humans experience the world through their senses. OBJECTIVES Ø52G3 - To understand the importance of the five senses. Ø52G4 - To identify the body part associated with each sense.	**CONCEPT:** Living things may change with the seasons. OBJECTIVES Ø52H1 - To understand how seasonal changes affect living things.	

GRADE: Kindergarten

GOAL: Ø53ØØ UNDERSTANDING FACTORS WHICH HELP MAKE EARTH A SUITABLE HOME FOR LIVING THINGS

J. ASTRONOMY	K. METEOROLOGY	L. GEOLOGY	M. OCEANOGRAPHY
CONCEPT: The earth is our home planet. **OBJECTIVES** Ø53J1 - To identify the earth as our home planet. **CONCEPT:** Day and night result from the rotation of the earth. **OBJECTIVES** Ø53J2 - To understand the relationship of the earth and sun in the changing from day to night.	**CONCEPT:** Rain is the result of condensation. **OBJECTIVES** Ø53K1 - To understand the relationship of clouds to rain and snow.		

ENVIRONMENTAL SCIENCE

GRADE: Kindergarten

GOAL: Ø54ØØ UNDERSTANDING THE IMPORTANCE OF WISE USE OF THE ENVIRONMENT

N. ENERGY AND THE ENVIRONMENT	O. MAN'S EFFECT ON THE EARTH	P. ECOSYSTEMS
CONCEPT: Energy is used in many different ways. OBJECTIVES Ø54N1 - To identify various types of energy. Ø54N2 - To discuss how energy is used in our everyday world.	CONCEPT: Air, water and land must be kept clean in order to be usable in the future. OBJECTIVES Ø5401 - To understand how people affect their environment. Ø5402 - To understand ways to keep the air, land and water clean.	

GRADE: One

GOAL: 151ØØ UNDERSTANDING THE IMPACT OF MAJOR INFLUENCES IN THE PHYSICAL WORLD

A. MACHINES AND WORK	B. ELECTRICITY AND MAGNETISM	C. SOUND, HEAT AND LIGHT	D MATTER AND ENERGY
CONCEPT: Work involves the movement of objects through a distance. OBJECTIVES 151A1 - To observe and explain how work is done. 151A2 - To identify kinds of motion used in doing work. 151A3 - To understand how simple machines make work easier.		**CONCEPT:** Sound travels in all directions and through various media. OBJECTIVES 151C1 - To discover the transmission of sound through different kinds of matter. 151C2 - To recognize that sound travels in all directions from its source. **CONCEPT:** Heat and light come from various sources. OBJECTIVES 151C3 - To recognize the sun as an important source of heat and light. 151C4 - To understand how a thermometer is used. 151C5 - To identify some of the important sources of heat and light.	**CONCEPT:** There are various kinds and states of matter. OBJECTIVES 151D1 - To understand that matter has weight and occupies space. 151D2 - To identify the different states of matter. 151D3 - To understand changes in the states of matter.

GRADE: One

GOAL: 152ØØ UNDERSTANDING PLANTS AND ANIMALS AS LIVING THINGS

E. ANIMALS	F. PLANTS	G. HUMAN BODY	H. GROWTH AND DEVELOPMENT	I. MICROSCOPIC LIFE
CONCEPT: Animals are living things with specific needs and characteristics. **OBJECTIVES** 152E1 - To understand the basic needs of all animals. 152E2 - To understand ways animals are grouped.	**CONCEPT:** Plants are living things with specific needs, characteristics and uses. **OBJECTIVES** 152F1 - To understand the basic needs of all plants. 152F2 - To identify the major parts of a plant. 152F3 - To identify the uses of various plants and plant parts as food for animals and humans.	**CONCEPT:** Humans are animals with characteristics and needs similar to other animals. **OBJECTIVES** 152G1 - To identify the basic needs of humans. 152G2 - To understand how humans are like and different from other animals.	**CONCEPT:** All things can be classified as living or non-living. **OBJECTIVES** 152H1 - To identify characteristics of living things. 152H2 - To distinguish between once-living and non-living.	

GRADE: ONE

GOAL: 153ØØ UNDERSTANDING BASIC CONCEPTS IN ASTRONOMY AND GEOLOGY

J. ASTRONOMY	K. METEOROLOGY	L. GEOLOGY	M. OCEANOGRAPHY
CONCEPT: Shadows are the result of things blocking light. **OBJECTIVES** 153J1 - To understand how shadows are created. **CONCEPT:** Moonlight is reflected sunlight. **OBJECTIVES** 153J2 - To understand the reflection of sunlight by the moon.		**CONCEPT:** Fossils provide information about things that lived in the past. **OBJECTIVES** 153L1 - To understand what fossils are. 153L2 - To understand how scientists learn about past life by studying fossils.	

GRADE: One

GOAL: 154ØØ UNDERSTANDING THE IMPORTANCE OF LIVING AND NON-LIVING THINGS IN THE ENVIRONMENT

N. ENERGY AND THE ENVIRONMENT	O. MAN'S EFFECT ON THE EARTH	P. ECOSYSTEMS
CONCEPT: Energy must be used wisely in order to insure energy sources in the future. OBJECTIVES 154N1 - To understand how energy is used in the school and home. 154N2 - To understand the importance of conserving energy in the school and home.	**CONCEPT:** Some living things have become extinct and others are endangered. OBJECTIVES 15401 - To understand why some living things have become extinct or endangered. 15402 - To understand how endangered species can be protected.	**CONCEPT:** Plants and animals are essential to life on earth. OBJECTIVES 154P1 - To understand why plants and animals are essential to life on earth. 154P2 - To understand how plants and animals are beneficial to each other.

PHYSICAL SCIENCE

GRADE: Two

GOAL: 251ØØ UNDERSTANDING THE PRESENCE AND SIGNIFICANCE OF MAGNETISM, ELECTRICITY, SOUND, HEAT, AND LIGHT IN THE PHYSICAL WORLD.

A. MACHINES AND WORK	B. ELECTRICITY AND MAGNETISM	C. SOUND, HEAT AND LIGHT	D MATTER AND ENERGY
	CONCEPT: Magnets vary in size, shape, composition, and use. OBJECTIVES 251B1 - To understand the meaning of magnetic force. 251B2 - To recognize the similarities and differences among various kinds of magnets. ========== CONCEPT: Electricity may be static or current. OBJECTIVES 251B3 - To understand the meaning of static electricity. 251B4 - To understand the meaning of current electricity. continued:	CONCEPT: Sound can serve as a source of noise pollution. OBJECTIVES 251C1 - To recognize sources of noise pollution ========== CONCEPT: Heat and light are related forms of energy. OBJECTIVES 251C2 - To understand the relationship between heat and light. 251C3 - To understand the sources and uses of heat and light. ========== CONCEPT: Heat energy affects matter in various ways. continued:	

PHYSICAL SCIENCE

GRADE: Two

GOAL: 2510Ø continued:

A. MACHINES AND WORK	B. ELECTRICITY AND MAGNETISM	C. SOUND, HEAT AND LIGHT	D MATTER AND ENERGY
	CONCEPT: Electricity can be harmful. OBJECTIVES 251B5 - To know and practice safety rules when using electricity.	OBJECTIVES 251C4 - To understand how heat energy affects matter. 251C5 - To understand the meaning of temperature.	

GRADE: Two

GOAL: 252ØØ UNDERSTANDING THE DIVERSITY IN THE PLANT AND ANIMAL KINGDOMS

E. ANIMALS	F. PLANTS	G. HUMAN BODY	H. GROWTH AND DEVELOPMENT	I. MICROSCOPIC LIFE
CONCEPT: Animals differ in many ways. OBJECTIVES 252E1 - To recognize distinguishing traits of insects and spiders. 252E2 - To recognize distinguishing traits of mammals.	**CONCEPT:** Green plants reproduce in various ways OBJECTIVES 252F1 - To understand how green plants reproduce. **CONCEPT:** The parts of a plant have specific functions and uses. OBJECTIVES 252F2 - To understand the functions of the parts of a flowering plant. 252F3 - To understand some uses of each plant part.		**CONCEPT:** All living things go through life cycles. OBJECTIVES 252H1 - To understand the meanings of the terms growth, development and life cycle.	

GRADE: Two

GOAL: 253ØØ UNDERSTANDING THE IMPORTANCE OF VARIOUS FACTORS IN THE AREAS OF ASTRONOMY, METEOROLOGY, AND GEOLOGY

J. ASTRONOMY	K. METEOROLOGY	L. GEOLOGY	M. OCEANOGRAPHY
CONCEPT: Satellites may be either natural or man-made. OBJECTIVES 253J1 - To understand the relationship of the sun to its satellites. 253J2 - To understand man-made satellites and their uses.	CONCEPT: Evaporation and condensation are part of a recurring cycle. OBJECTIVES 253K1 - To understand condensation and evaporation. 253K2 - To understand the water cycle.	CONCEPT: Fossils provide information about the earth's past. OBJECTIVES 253L1 - To understand how scientists use fossils to learn about the age and history of the earth.	

ENVIRONMENTAL SCIENCE

GRADE: Two

GOAL: 254ØØ UNDERSTANDING HUMAN DEPENDENCE UPON AND RESPONSIBILITY TO THE ENVIRONMENT

N. ENERGY AND THE ENVIRONMENT	O. MAN'S EFFECT ON THE EARTH	P. ECOSYSTEMS
CONCEPT: Fossil fuels are a source of energy. OBJECTIVES 254N1 - To understand how fossil fuels are used in the community. 254N2 - To understand ways to conserve fossil fuels.	CONCEPT: Some activities in which people engage are harmful to the environment. OBJECTIVES 25401 - To understand how various activities affect the environment.	**CONCEPT:** Plants and animals may play various roles in the environment. OBJECTIVES 254P1 - To understand the various roles plants and animals play in the environment.

SCIENCE

CURRICULUM FRAMEWORK

Skills and Content

3 - 4

. THE SCIENCE CURRICULUM IN GRADES 3 AND 4 SHALL INCLUDE BUT NOT NECESSARILY BE LIMITED TO THE SKILLS AND CONTENT CONTAINED IN THIS SECTION.

THE SKILLS AND CONTENT LISTED SHALL BE INTRODUCED AND REINFORCED AS NECESSARY TO HELP STUDENTS ACHIEVE TO THEIR MAXIMUM POTENTIAL.

SCIENCE EDUCATION SKILLS

3 - 4

PROCESS SKILLS	READING/STUDY SKILLS	INTERPERSONAL RELATIONS AND ATTITUDES
Observing Describing Classifying Predicting Measuring (length, mass, volume) Questioning Sequencing Using space/time relations Collecting data Recording data Analyzing data Drawing conclusions Labelling diagrams Identifying problems and possible solutions	Following directions Reading to find answers to questions Interpreting pictures Identifying the main idea Comparing and contrasting ideas and information Interpreting tables, graphs, and diagrams Constructing tables, graphs, and diagrams Interpreting symbols Reading for details Locating needed information in the library Distinguishing between scientific fact and opinion	Listening Cooperating Communicating orally and in writing Appreciating science for enjoyment Appreciating the ideas of others Understanding how our activities affect the environment Appreciating the beauty of nature Developing a sense of responsibility Respecting rules and authority Relating scientific information to everyday experiences Understanding that science is subject to change

PHYSICAL SCIENCE

GRADE: Three

GOAL: 351ØØ UNDERSTANDING SOURCES, FORMS, AND USES OF ENERGY

A. MACHINES AND WORK

CONCEPT: Machines use energy to make work easier.

OBJECTIVES

351A1 - To recognize the six types of simple machines.

351A2 - To understand force and how it can be applied.

351A3 - To understand the scientific meaning of work.

351A4 - To understand the occurrence of friction when machines do work.

351A5 - To understand how machines use energy.

351A6 - To understand the importance of safety in the use of machines.

B. ELECTRICITY AND MAGNETISM

CONCEPT: Electromagnets are fundamental to the production of current electricity.

OBJECTIVES

351B1 - To identify common uses of electromagnets.

351B2 - To identify the components of an electromagnet.

351B3 - To understand that some materials conduct electricity while others do not.

==========

CONCEPT: Electricity can be harmful.

OBJECTIVES

351B4 - To know and practice safety rules when using electricity.

C. SOUND, HEAT AND LIGHT

D MATTER AND ENERGY

CONCEPT: Matter undergoes physical and chemical changes.

OBJECTIVES

351D1 - To understand physical and chemical changes in matter.

==========

CONCEPT: Energy exists in different forms.

OBJECTIVES

351D2 - To recognize the various forms in which energy exists.

==========

CONCEPT: All matter is made up of molecules and atoms.

OBJECTIVES

351D3 - To understand that all matter is made up of molecules and atoms.

GRADE: Three

GOAL: 352ØØ UNDERSTANDING FACTORS AND FUNCTIONS INVOLVED IN THE GROWTH AND DEVELOPMENT OF ANIMALS, PLANTS AND HUMAN BEINGS

E. ANIMALS	F. PLANTS	G. HUMAN BODY	H. GROWTH AND DEVELOPMENT	I. MICROSCOPIC LIFE
CONCEPT: Animals differ in many ways. OBJECTIVES 352E1 - To recognize distinguishing traits of amphibians. 352E2 - To recognize distinguishing traits of fish. 352E3 - To recognize distinguishing traits of reptiles.	**CONCEPT:** Plant growth is influenced by the environment. OBJECTIVES 352F1 - To identify the factors necessary for plant growth. 352F2 - To understand how green plants make and store their own food. 352F3 - To understand the adaptation of plants to the environment. ========== **CONCEPT:** Oxygen and carbon dioxide play important roles in the survival of living things. continued:	**CONCEPT:** The human skeleton provides support and protection to body parts. OBJECTIVES 352G1 - To understand the function of various parts of the skeleton. 352G2 - To understand the relationship of cartilage to the skeletal system. 352G3 - To recognize the types and functions of joints. ========== **CONCEPT:** Muscles are responsible for movement of body parts. continued:		

GRADE: Three

GOAL: 352ØØ continued:

E. ANIMALS	F. PLANTS	G. HUMAN BODY	H. GROWTH AND DEVELOPMENT	I. MICROSCOPIC LIFE
	OBJECTIVES 352F4 - To understand the interdependence of green plants and other living things. 352F5 - To understand the role of oxygen and carbon dioxide in the survival of plants and animals.	OBJECTIVES 352G4 - To understand the functioning of voluntary and involuntary muscles. 352G5 - To understand the functioning of tendons. ========== CONCEPT: The skin is an important organ with many functions. OBJECTIVES 352G6 - To understand the functions of the skin.		

GRADE: Three

GOAL: 353ØØ UNDERSTANDING THE MAKE-UP OF THE SOLAR SYSTEM, CLOUDS, AND SOIL

J. ASTRONOMY

CONCEPT: Our solar system is composed of one star, nine planets and their satellites.

OBJECTIVES

353J1 - To understand the terms star, solar system, galaxy and universe.

353J2 - To understand the composition of our solar system.

353J3 - To understand the similarities and differences among planets.

353J4 -To understand the Earth - Sun - Moon relationship.

K. METEOROLOGY

CONCEPT: Cloud formations are associated with weather conditions.

OBJECTIVES

353K1 - To understand how cloud formations relate to weather conditions.

L. GEOLOGY

CONCEPT: Soil is composed of living and non-living matter.

OBJECTIVES

353L1 - To understand some living and non-living components of soil.

353L2 - To understand the different kinds of soil.

==========

CONCEPT: Rocks are non-living matter found in the earth's crust.

OBJECTIVES

353L3 - To understand the various kinds of rocks and how they are formed.

M. OCEANOGRAPHY

GRADE: Three

GOAL: 354ØØ UNDERSTANDING THE EFFECT OF ENVIRONMENTAL CHANGES ON LIVING THINGS

N. ENERGY AND THE ENVIRONMENT	O. MAN'S EFFECT ON THE EARTH	P. ECOSYSTEMS
CONCEPT: Energy is often wasted in the home and community. OBJECTIVES 354N1 - To understand how energy is wasted and how it can be conserved.	**CONCEPT:** Changes in the environment may change living things within the environment. OBJECTIVES 35401 - To understand the effect of environmental change on inhabitants. 35402 - To understand how habitats can be preserved.	**CONCEPT:** The habitat is the environment in which particular organisms live. OBJECTIVES 354P1 - To understand the basic concept of habitat. 354P2 - To understand how living things can adapt to their environment.

GRADE: Four

GOAL: 451ØØ IDENTIFYING THE STATES AND PROPERTIES OF MATTER, AND UNDERSTANDING HOW CHANGES OCCUR

A. MACHINES AND WORK	B. ELECTRICITY AND MAGNETISM	C. SOUND, HEAT AND LIGHT	D MATTER AND ENERGY
	CONCEPT: Not all matter conducts electricity. OBJECTIVES 451B1 - To understand the principles of conduction and insulation. CONCEPT: Electric current may travel along one or more paths. OBJECTIVES 451B2 - To distinguish between parallel and series circuits. CONCEPT: Electricity can be harmful. OBJECTIVES 451B3 - To know and practice safety rules when using electricity.	CONCEPT: Sound travels by molecular motion. OBJECTIVES 451C1 - To understand the movement of sound through matter. 451C2 - To understand how sound waves may be reflected or absorbed by matter 451C3 - To understand the relation between vibrations and pitch. CONCEPT: Heat and light are obtained from various sources. OBJECTIVES 451C4 - To identify sources of heat and light. continued:	CONCEPT: Solids, liquids, and gases have identifying properties. OBJECTIVES 451D1 - To distinguish the properties of the three states of matter. 451D2 - To understand the involvement of energy in changing the state of matter. CONCEPT: All matter is composed of molecules. OBJECTIVES 451D3 - To understand the relationship of molecules and atoms.

PHYSICAL SCIENCE

GRADE: Four

GOAL: 4510[illegible] continued;

A. MACHINES AND WORK	B. ELECTRICITY AND MAGNETISM	C. SOUND, HEAT AND LIGHT	D MATTER AND ENERGY
		451C5 - To understand the relationship between heat and friction.	

GRADE: Four

GOAL: 452ØØ UNDERSTANDING THE STRUCTURE OF LIVING THINGS

E. ANIMALS	F. PLANTS	G. HUMAN BODY	H. GROWTH AND DEVELOPMENT	I. MICROSCOPIC LIFE
CONCEPT: Animals differ in many ways. OBJECTIVES 452E1 - To identify distinguishing characteristics and behaviors of social insects. 452E2 - To identify distinguishing characteristics of selected vertebrates. 452E3 - To identify distinguishing characteristics of selected invertebrates.	**CONCEPT:** Fungi are non-green plants. OBJECTIVES 452F1 - To distinguish between fungi and green plants. **CONCEPT:** Plants may be classified as seed or non-seed. OBJECTIVES 452F2 - To understand the characteristics of seedbearing plants. 452F3 - To understand the characteristics of non-seedbearing plants. continued:	**CONCEPT:** The ear is constructed to facilitate the sense of hearing. OBJECTIVES 452G1 - To understand the parts of the ear and their functions. **CONCEPTS:** The eye is constructed to provide the sense of sight. OBJECTIVES 452G2 - To understand how the parts of the eye function.		**CONCEPT:** Living things are composed of one or more cells. OBJECTIVES 452I1 - To recognize the basic parts of plant and animal cells. 452I2 - To understand the increasing complexity of cellular organization from cell to organism.

GRADE: Four

GOAL: 452ØØ continued:

E. ANIMALS	F. PLANTS	G. HUMAN BODY	H. GROWTH AND DEVELOPMENT	I. MICROSCOPIC LIFE
	CONCEPT: All plants go through life cycles. OBJECTIVES 452F4 - To understand the life cycle of seed plants. 452F5 - To understand the life cycle of non-seed plants.			

GRADE: Four

GOAL: 453ØØ UNDERSTANDING BASIC PRINCIPLES AND RELATIONSHIPS IN THE FIELDS OF METEOROLOGY, GEOLOGY, AND OCEANOGRAPHY

J. ASTRONOMY	K. METEOROLOGY	L. GEOLOGY	M. OCEANOGRAPHY
	CONCEPT: Atmospheric conditions vary. OBJECTIVES 453K1 - To understand what weather is and the effect of changing atmospheric conditions. 453K2 - To understand how weather predictions are made.	CONCEPT: The earth is constantly changing. OBJECTIVES 453L1 - To understand factors which cause changes in the earth's surface and the effects of these changes. 453L2 - To understand how some changes can be controlled.	CONCEPT: Oceans cover most of the earth's surface and are important to life on earth. OBJECTIVES 453M1 - To understand the locations and physical features of the oceans. 453M2 - To understand the changes which occur in the oceans and their effect on the earth. 453M3 - To understand relationships among oceans, weather and climate. 453M4 - To understand the relationships among ocean food chains. 453M5 - To understand resources provided by the oceans.

GRADE: Four

GOAL: 454ØØ UNDERSTANDING VARIOUS WAYS IN WHICH LIVING THINGS MAY AFFECT THE ENVIRONMENT

N. ENERGY AND THE ENVIRONMENT	O. MAN'S EFFECT ON THE EARTH	P. ECOSYSTEMS
CONCEPT: Alternative energy forms have been developed to conserve natural resources. OBJECTIVES 454N1 - To understand why alternative energy forms are important.	**CONCEPT:** Pesticides and other chemicals may be harmful to the environment. OBJECTIVES 45401 - To understand how some chemicals may affect the environment. **CONCEPT:** Environmental problems may vary from community to community. OBJECTIVES 45402 - To understand environmental concerns within a community.	**CONCEPT:** Living things perform specialized tasks in the environment. OBJECTIVES 454P1 - To understand the differences among producers, consumers and decomposers.

SCIENCE

CURRICULUM FRAMEWORK

Skills and Content

5 - 6

THE SCIENCE CURRICULUM IN GRADES 5 AND 6 SHALL INCLUDE BUT NOT NECESSARILY BE LIMITED TO THE SKILLS AND CONTENT CONTAINED IN THIS SECTION.

THE SKILLS AND CONTENT LISTED SHALL BE INTRODUCED AND REINFORCED AS NECESSARY TO HELP STUDENTS ACHIEVE TO THEIR MAXIMUM POTENTIAL.

SCIENCE EDUCATION SKILLS

5 - 6

PROCESS SKILLS	READING/STUDY SKILLS	INTERPERSONAL RELATIONS AND ATTITUDES
Observing Describing Classifying Measuring Questioning Sequencing Using space/time relations Collecting data Recording data Analyzing data Drawing conclusions Labelling diagrams Identifying problems and possible solutions Using a taxonomic key Formulating models	Following directions Reading to find answers to questions Interpreting pictures Identifying the main idea Comparing and contrasting ideas and information Interpreting tables, graphs, and diagrams Constructing tables, graphs, and diagrams Interpreting symbols Reading for details Locating needed information in the library Distinguishing between scientific fact and opinion Summarizing Writing scientific reports Judging the relevance of information Taking notes	Listening Cooperating Communicating orally and in writing Appreciating science for enjoyment Appreciating the ideas of others Understanding how our activities affect the environment Appreciating the beauty of nature Developing a sense of responsibility Respecting rules and authority Relating scientific information to everyday experiences Understanding that science is subject to change Appreciating the history of science Demonstrating group work skills Understanding the limits of science and technology Developing an understanding for the relationship among science, technology, and society Being open-minded Developing decision-making skills

GRADE: Five

GOAL: 551ØØ UNDERSTANDING THE PRACTICAL APPLICATION OF VARIOUS PRINCIPLES IN PHYSICAL SCIENCE

A. MACHINES AND WORK	B. ELECTRICITY AND MAGNETISM	C. SOUND, HEAT AND LIGHT	D MATTER AND ENERGY
CONCEPT: Use of machines may increase the efficiency of work. OBJECTIVES 551A1 - To understand how machines make work easier. 551A2 - To understand the types and functions of simple machines. 551A3 - To understand the relationship of simple and complex machines.	CONCEPT: Current electricity involves the movement of electrons. OBJECTIVES 551B1 - To understand the structure of wet and dry cells. 551B2 - To understand the construction of simple circuits. 551B3 - To understand the importance of conduction and insulation to the flow of electricity.	CONCEPT: White light is made up of all the colors of the rainbow. OBJECTIVES 551C1 - To understand the properties of light. CONCEPT: The path of light may be affected by lenses and mirrors. OBJECTIVES 551C2 - To understand the difference between concave and convex surfaces.	CONCEPT: Matter consists of molecules and atoms. OBJECTIVES 551D1 - To understand molecules, atoms, compounds and elements. CONCEPT: Energy exists in many forms. OBJECTIVES 551D2 - To understand the relationship between kinetic and potential energy. 551D3 - To understand chemical, nuclear, heat and mechanical energy. 551D4 - To understand the relationship between mass and weight.

LIFE SCIENCE

GRADE: Five

GOAL: 552ØØ UNDERSTANDING IMPORTANT FEATURES AND FUNCTIONS OF VARIOUS FORMS OF LIFE

E. ANIMALS	F. PLANTS	G. HUMAN BODY	H. GROWTH AND DEVELOPMENT	I. MICROSCOPIC LIFE
CONCEPT: Vertebrates have similarities and differences. OBJECTIVES 552E1 - To understand distinguishing characteristics of vertebrate animals.	**CONCEPT:** Plants have complex structures with specialized functions. OBJECTIVES 552F1 - To understand the structure and function of stems. 552F2 - To understand the structure and function of leaves. 552F3 - To understand the structure and function of roots. ========== **CONCEPT:** There are two basic types of seed plants. continued:	**CONCEPT:** Humans have specialized systems responsible for body functioning. OBJECTIVES 552G1 - To understand the parts and functioning of the digestive system. 552G2 - To understand the parts and functioning of the respiratory system. 552G3 - To understand the parts and functioning of the circulatory system. ========== **CONCEPT:** There are diseases associated with each system of the body. continued:		**CONCEPT:** Microscopic organisms are essential to life. ODBJECTIVES 552I1 - To understand the types and characteristics of micro-organisms. 552I2 - To understand the distribution of microscopic life.

GRADE: Five

GOAL: 552ØØ continued

E. ANIMALS	F. PLANTS	G. HUMAN BODY	H. GROWTH AND DEVELOPMENT	I. MICROSCOPIC LIFE
	OBJECTIVES 552F4 - To understand the distinguishing characteristics of conebearing and flowering plants.	OBJECTIVES 552G4 - To understand diseases associated with the digestive system. 552G5 - To understand diseases associated with the respiratory system. 552G6 - To understand diseases associated with the circulatory system.		

EARTH AND SPACE SCIENCE

GRADE: Five

GOAL: 553ØØ UNDERSTANDING FACTORS ASSOCIATED WITH THE CONSTANT CHANGES IN THE EARTH

J. ASTRONOMY	K. METEOROLOGY	L. GEOLOGY	M. OCEANOGRAPHY
		CONCEPT: Many forces cause the earth to change. OBJECTIVES 553L1 - To understand the composition and characteristics of the various layers of the earth. 553L2 - To understand forces on the surface and within the earth which cause it to change.	

ENVIRONMENTAL SCIENCE

GRADE: Five

GOAL: 554ØØ UNDERSTANDING THE INTERDEPENDENCE OF HUMAN BEINGS AND THEIR ENVIRONMENT

N. ENERGY AND THE ENVIRONMENT	O. MAN'S EFFECT ON THE EARTH	P. ECOSYSTEMS
CONCEPT: The extraction and use of fossil fuels has impacted the environment. OBJECTIVES 554N1 - To understand the relationship between fossil fuels and the environment. **CONCEPT:** Natural resources are either renewable or non-renewable. OBJECTIVES 554N2 - To understand the kinds, uses and problems associated with renewable and non-renewable resources.	**CONCEPT:** Each individual impacts the environment. OBJECTIVES 55401 - To understand the relationship between the individual and the environment.	**CONCEPT:** Each local community has important plants and animals. OBJECTIVES 554P1 - To identify important plants and animals within the local community.

PHYSICAL SCIENCE

GRADE: Six

GOAL: 651ØØ UNDERSTANDING THE SIGNIFICANCE OF CHANGE IN THE PHYSICAL WORLD

A. MACHINES AND WORK	B. ELECTRICITY AND MAGNETISM	C. SOUND, HEAT AND LIGHT	D MATTER AND ENERGY
CONCEPT: Machines can be used to alter a force. OBJECTIVES 651A1 - To understand the effect of machines on force. CONCEPT: Motion of objects is affected by friction. OBJECTIVES 651A2 - To understand the relationship of friction to the functioning of machines.	CONCEPT: Magnets are either natural or man-made. OBJECTIVES 651B1 - To understand the principle of magnetism. 651B2 - To understand the construction of a magnet. CONCEPT: Various sources of energy can be utilized in the production of electricity. OBJECTIVES 651B3 - To understand various methods of producing electricity. continued:	CONCEPT: Sound is created by vibrating matter. OBJECTIVES 651C1 - To understand how sound is produced. 651C2 - To understand the properties of sound. CONCEPT: Matter is changed when energy is absorbed or lost. OBJECTIVES 651C3 - To understand how heat is transferred. CONCEPT: Heat is present in all matter. continued:	CONCEPT: The properties of matter can be identified and measured. OBJECTIVES 651D1 - To understand the properties of matter. 651D2 - To understand atomic and molecular structure.

GRADE: Six

GOAL: 651ØØ continued;

A. MACHINES AND WORK	B. ELECTRICITY AND MAGNETISM	C. SOUND, HEAT AND LIGHT	D MATTER AND ENERGY
	CONCEPT: Electricity can be harmful. OBJECTIVES 651B4 - To know and practice rules when using electricity.	OBJECTIVES 651C4 - To understand the scientific meaning of heat.	

GRADE: Six

GOAL: 652ØØ UNDERSTANDING PROCESSES AND SYSTEMS ESSENTIAL TO PLANT AND HUMAN LIFE

E. ANIMALS	F. PLANTS	G. HUMAN BODY	H. GROWTH AND DEVELOPMENT	I. MICROSCOPIC LIFE
	CONCEPT: Photosnythesis and cellular respiration are life sustaining plant processes. OBJECTIVES 652F1 - To understand the process of photosynthesis. 652F2 - To understand the process of cellular respiration. 652F3 - To understand how photosynthesis and cellular respiration complement each other.	CONCEPT: Humans have specialized systems responsible for body functioning. OBJECTIVES 652G1 - To understand the parts and functioning of the nervous system. 652G2 - To understand the parts and functioning of the endocrine system. 652G3 - To understand the parts and functioning of the reproductive system. continued:	CONCEPT: Traits are passed from parent to offspring. OBJECTIVES 652H1 - To understand the difference between sexual and asexual reproduction in plants and animals. 652H2 - To understand how traits are passed from parent to offspring.	

GRADE: Six

GOAL: 652ØØ continued:

E. ANIMALS	F. PLANTS	G. HUMAN BODY	H. GROWTH AND DEVELOPMENT	I. MICROSCOPIC LIFE
		CONCEPT: There are diseases associated with each system of the body. OBJECTIVES 652G4 - To understand some diseases associated with the nervous system. 652G5 - To understand some diseases associated with the endocrine system. 652G6 - To understand some diseases associated with the reproductive system.		

GRADE: Six

GOAL: 653ØØ UNDERSTANDING THE EARTH AS A CONSTANTLY CHANGING PLANET WITHIN THE UNIVERSE

J. ASTRONOMY	K. METEOROLOGY	L. GEOLOGY	M. OCEANOGRAPHY
CONCEPT: The earth is only one small part of the universe. OBJECTIVES 653J1 - To understand the various components of the universe. 653J2 - To recognize various efforts and achievements in the area of space exploration.		**CONCEPT:** Changes are constantly occurring in and on the earth. OBJECTIVES 653L1 - To understand various kinds of motion on the surface and within the earth.	**CONCEPT:** The topography of the ocean floor is in constant change. OBJECTIVES 653M1 - To understand the structure and constant changing of the ocean floor.

ENVIRONMENTAL SCIENCE

GRADE: Six

GOAL: 654ØØ UNDERSTANDING FACTORS AND BEHAVIORS ASSOCIATED WITH RESPONSIBLE ENVIRONMENTAL ACTION

N. ENERGY AND THE ENVIRONMENT

CONCEPT: Local communities address their energy needs in different ways.

OBJECTIVES

654N1 - To understand how local communities meet energy demands.

654N2 - To understand how various life styles influence energy demands.

CONCEPT: Energy may be obtained from sources other than fossil fuels.

OBJECTIVES

654N3 - To understand the advantages and disadvantages of alternate energy forms.

O. MAN'S EFFECT ON THE EARTH

CONCEPT: Increasing population impacts the natural resources of the earth.

OBJECTIVES

65401 - To understand the relationship among population size, life style and consumption of natural resources.

P. ECOSYSTEMS

CONCEPT: Many factors influence the stability of ecosystems.

OBJECTIVES

654P1 - To understand the factors which influence the stability of ecosystems.

CONCEPT: Predators play an essential role in ecosystems.

OBJECTIVES

654P2 - To understand the role of predators in an ecosystem.

SCIENCE

CURRICULUM FRAMEWORK

Skills and Content

7 - 8

THE SCIENCE CURRICULUM IN GRADES 7 AND 8 SHALL INCLUDE BUT NOT NECESSARILY BE LIMITED TO THE SKILLS AND CONTENT CONTAINED IN THIS SECTION.

THE SKILLS AND CONTENT LISTED SHALL BE INTRODUCED AND REINFORCED AS NECESSARY TO HELP STUDENTS ACHIEVE TO THEIR MAXIMUM POTENTIAL.

SCIENCE EDUCATION SKILLS

7 - 8

PROCESS SKILLS	READING/STUDY SKILLS	INTERPERSONAL RELATIONS AND ATTITUDES
Observing Describing Classifying Measuring Questioning Sequencing Using space/time relations Collecting data Recording data Analyzing data Drawing conclusions Labelling diagrams Identifying problems and possible solutions Using a taxonomic key Formulating models Controlling variables Designing experiments Using laboratory equipment	Following directions Reading to find answers to questions Interpreting pictures Identifying the main idea Comparing and contrasting ideas and information Interpreting tables, graphs, and diagrams Constructing tables, graphs, and diagrams Interpreting symbols Reading for details Locating needed information in the library Distinguishing between scientific fact and opinion Summarizing Writing scientific reports Judging the relevance of information Taking notes Judging the authenticity of information	Listening Cooperating Communicating orally and in writing Appreciating science for enjoyment Appreciating the ideas of others Understanding how our activities affect the environment Appreciating the beauty of nature Developing a sense of responsibility Respecting rules and authority Relating scientific information to everyday experiences Understanding that science is subject to change Appreciating the history of science Demonstrating group work skills Understanding the limits of science and technology Developing an understanding for the relationships among science, technology, and society Being open-minded Developing decision-making skills

GRADE: Seven

GOAL: 752ØØ UNDERSTANDING THE GROWTH AND DEVELOPMENT OF LIVING THINGS

E. ANIMALS	F. PLANTS	G. HUMAN BODY	H. GROWTH AND DEVELOPMENT	I. MICROSCOPIC LIFE
CONCEPT: Animal life-forms differ from simple to complex. OBJECTIVES 752E1 - To understand the taxanomic divisions of the animal kingdom. 752E2 - To understand the development of animals and their body systems from coelenterates to humans.	**CONCEPT:** Plant life-forms differ from simple to complex. OBJECTIVES 752F1 - To understand the broad taxanomic divisions of the plant kingdom. 752F2 - To understand the development of plants and their systems from algae to flowering plants. ========== **CONCEPT:** Photosyn thesis and cellular respiration are basic life-sustaining processes. continued:	**CONCEPT:** A variety of complex body systems operate together to form a functioning human body. OBJECTIVES 752G1 - To understand the structure and function of the digestive system. 752G2 - To understand the structure and function of the circulatory system. 752G3 - To understand the structure and function of the respiratory system. 752G4 - To understand the structure and function of the nervous system. continued:	**CONCEPT:** Traits are passed from parents to offspring. OBJECTIVES 752H1 - To understand the similarities and differences between sexual and asexual reproduction. 752H2 - To understand the function of genes and chromasomes in the passing of genetic traits.	**CONCEPT:** The cell is the basic unit of all living things. OBJECTIVES 75211 - To understand the basic structure of plant and animal cells. 75212 - To understand the basic function of various cellular structures. 75213 - To understand the roles of various specialized cells in plant and animal systems. ========== **CONCEPT:** Cell division is necessary for living things to grow and reproduce. continued:

GRADE: Seven

GOAL: 752ØØ continued:

E. ANIMALS	F. PLANTS	G. HUMAN BODY	H. GROWTH AND DEVELOPMENT	I. MICROSCOPIC LIFE
	OBJECTIVES 752F3 - To understand the process of photosynthesis. 752F4 - To understand the process of cellular respiration. 752F5 - To understand the difference in photosynthesis and cellular respiration.	752G5 - To understand the structure and function of the reproductive system. 752G6 - To understand the structure and function of the endocrine system. 752G7 - To understand how disorders of the body systems affect the functioning of the body. ========== CONCEPT: In many ways, humans are the most complex animals living. OBJECTIVES 752G8 - To understand the development of various body structures and systems.		OBJECTIVES 752I4 - To understand the role and mechanics of cell division. ========== CONCEPT: The world of microscopic life contains a variety of organisms. OBJECTIVES 752I5 - To understand that microscopic life includes monerans, protists and bacteria. 752I6 - To understand the structure and function of selected protists. 752I7 - To understand basic groupings of bacteria. 752I8 - To understand the importance of bacteria.

ENVIRONMENTAL SCIENCE

GRADE: Seven

GOAL: 754ØØ UNDERSTANDING THE RELATIONSHIP BETWEEN HUMAN BEHAVIOR AND THE MAINTENANCE OF A SATISFACTORY ENVIRONMENT

N. ENERGY AND THE ENVIRONMENT	O. MAN'S EFFECT ON THE EARTH	P. ECOSYSTEMS
	CONCEPT: An environment is affected by the population and its life style. OBJECTIVES 75401 - To understand how population affects the environment. 75402 - To understand how life styles affect the environment. ========== CONCEPT: Man's use of natural resources has led to environmental problems. OBJECTIVES 75403 - To understand the impact of hazardous waste. 75404 - To understand how the use of water impairs water quality. ========== continued:	CONCEPT: Many factors affect the stability of an ecosystem. OBJECTIVES 754P1 - To understand the role of abiotic factors in an ecosystem. 754P2 - To understand the importance of diversity within an ecosystem. 754P3 - To understand how disruptions in the natural systems impact the environment. 754P4 - To understand the role of limiting factors in the ecosystem. 754P5 - To understand the effects of environmental change on organisms.

GRADE: Seven

GOAL: 75400 continued

N. ENERGY AND THE ENVIRONMENT	O. MAN'S EFFECT ON THE EARTH	P. ECOSYSTEMS
	CONCEPT: Human actions have affected the number and distribution of living things. OBJECTIVES 75405 - To understand how attitudes toward environmental issues affect actions. 75406 - To understand reasons for extinction and endangerment. 75407 - To understand the effect of introducing exotic species into an ecosystem.	

EARTH AND SPACE SCIENCE

GRADE: Eight

GOAL: 853ØØ UNDERSTANDING CHARACTERISTICS, FORCES, AND CHANGE IN RELATION TO THE EARTH AND THE UNIVERSE

J. ASTRONOMY	K. METEOROLOGY	L. GEOLOGY	M. OCEANOGRAPHY
CONCEPT: The universe is constantly changing. OBJECTIVES 853J1 - To understand theories of the earth's origin. 853J2 - To understand characteristics, composition, and activities of stars. 853J3 - To understand our sun and its satellites. 853J4 - To understand theories of the moon's origin. 853J5 - To understand the results of the moon's movements. continued:	CONCEPT: The earth's atmosphere is in constant change. OBJECTIVES 853K1 - To distinguish the various layers of the earth's atmosphere. 853K2 - To understand the characteristics and influences of the earth's winds. 853K3 - To understand the water cycle. 853K4 - To understand the characteristics and properties of air masses. 853K5 - To understand the work of meteorologists. continued:	CONCEPT: The constantly changing nature of the earth is evident. OBJECTIVES 853L1 - To understand the structure and composition of the earth. 853L2 - To understand the use of rocks and fossils in determining the age of the earth. 853L3 - To understand the cause and effect of various forces upon the earth.	CONCEPT: The ocean is the source of many important resources. OBJECTIVES 853M1 - To understand the diversity of life in the ocean. 853M2 - To understand the composition, structure, and importance of the ocean floor. 853M3 - To understand the causes and effects of waves, currents, and tides. 853M4 - To understand the constantly changing relationship between the land and sea.

GRADE: Eight

GOAL: 853ØØ continued:

J. ASTRONOMY	K. METEOROLOGY	L. GEOLOGY	M. OCEANOGRAPHY
853J6 - To understand the relationship of time and motion to the earth's movements. 853J7 - To understand the terms of measurement in the universe.	853K6 - To understand the different types of clouds and storms. 853K7 - To understand the presence of various climates in the world.		

ENVIRONMENTAL SCIENCE

GRADE: Eight

GOAL: 854ØØ UNDERSTANDING BASIC RELATIONSHIPS BETWEEN PEOPLE AND THEIR ENVIRONMENT

N. ENERGY AND THE ENVIRONMENT	O. MAN'S EFFECT ON THE EARTH	P. ECOSYSTEMS
CONCEPT: Human beings are dependent upon renewable and non-renewable resources. **OBJECTIVES** 854N1 - To understand the importance of protection and wise use of environmental resources. 854N2 - To identify and understand various methods of conserving natural resources. 854N3 - To identify and explain alternate sources of energy. 854N4 - To understand the effect of energy shortages on life styles.	**CONCEPT:** Human beings are responsible for the quality of their environment. **OBJECTIVES** 85401 - To understand the causes, effects, and solutions of environmental pollution problems. 85402 - To understand the formation of pollutants through the environment.	

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